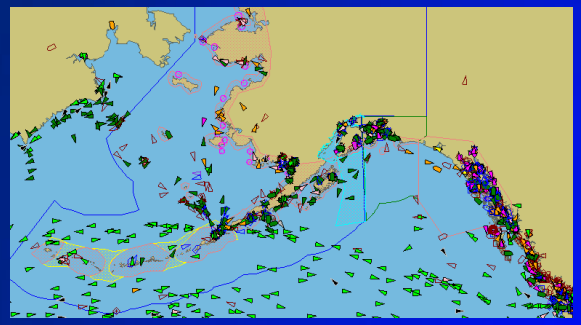

Marine Exchange of Alaska

www.mxak.org

Arctic Domain Awareness Center
Partner Review Meeting

Buddy Custard
Captain, U.S. Coast Guard (retired)

30 June 2015

Agenda

- Marine Exchange Background
- Arctic Marine Transportation System Risks & Challenges
- MXAK Tracking, Monitoring & Analysis Systems
- Marine Domain Management
- MXAK Partnerships
- Way Ahead

Marine Exchanges

Exchange
Maritime Information

Telegraph Hill San Francisco
1850

Marine Exchanges Date Back to 1800's

- Brokers of Maritime Information
- Initially used telescopes and semaphore
- Today radars, radios, AIS, e-mail, web, and satellites.

San Francisco Exchange 1857

Marine Exchange of Alaska Est. 2000

Maritime Information Services of North America (MISNA)

Alaska

Seattle

Portland

San Francisco

LA/LB

New York/New Jersey

Philadelphia

Baltimore

Hampton Roads Virginia

Jacksonville

Tampa

New Orleans

Houston

Marine Exchange of Alaska

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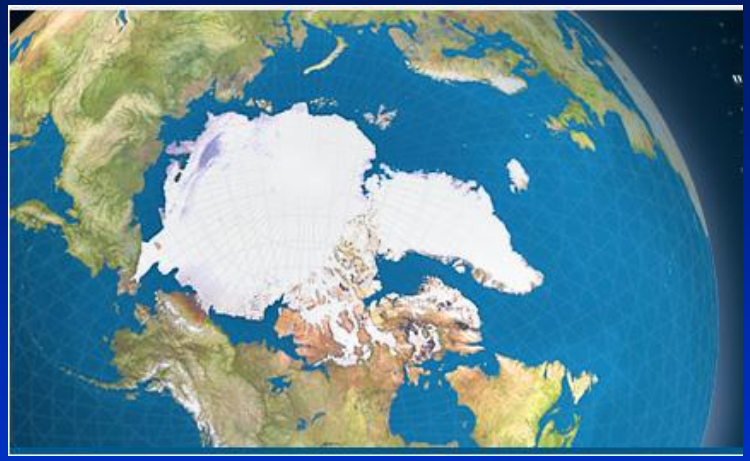


A non-profit maritime organization established to provide the Alaska maritime community information, communications and services to ensure safe, secure, efficient and environmentally responsible maritime operations.

Shared Marine Industry, Government and Public's Goals

Members – Maritime Professionals

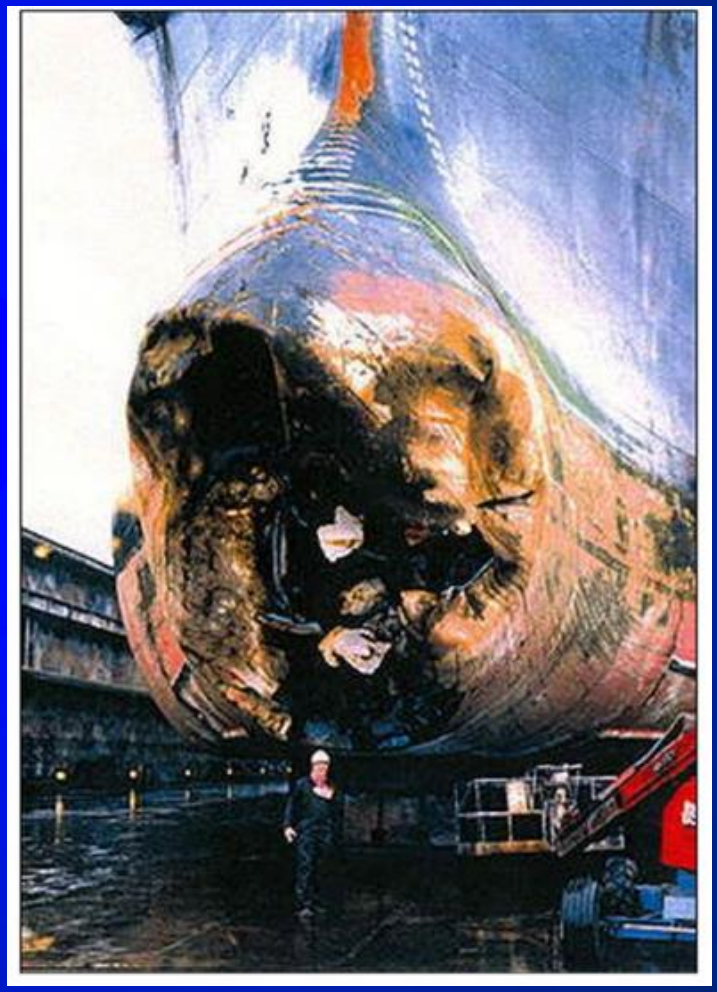
- Tanker Companies
- AMHS
- Cruise Industry
- Container Lines
- Passenger Vessel Operators
- Ports and Harbors
- Tug and Barge Companies
- Oil Spill Response Organizations
- Fishing Companies
- Pilot Associations

Arctic Marine Transportation System Challenges

- Climate change and changing ice conditions
- New and expanded resource development
- Community resupply
- Increased marine traffic
- Limited infrastructure, cost of building and maintaining infrastructure
- Tourism & Adventurers
- Limited search and rescue capacity
- International interest

Risks and Concerns

- Groundings
- Collisions
- Marine Mammal Strikes
- Altering & Impeding Migration Routes
- Subsistence Hunting
- Loss of Power
- Unintended Ice Encounters
- Sinkings
- Oil Spills



What are the Vessels of Concern?

- **Tankers**
- **Cargo Ships**
- Offshore Supply Vessels
- Drilling Vessels
- Tugs and Oil Barges
- Fishing Vessels
- Tugs and Deck Barges
- Landing Craft
- Oil Spill Response Vessels
- Pleasure Crafts

Why Track Vessels?

- Safety Net
- Risk Assessments
- Environmental Protection
- Validate Compliance
- Emergency Response
- Improve Efficiency
- Maritime Security

Safe, Secure, Efficient and Environmentally Sound Maritime Operations

Vessel Tracking

Primary focus on Prevention ….Secondary Response

Development and Operation of a Vessel Tracking System providing information on:

- Level of Maritime Activity
- Types of Vessels in Transit
- Vessel Routes
- Location of Response Resources
- Level of Compliance with Environmental Protection Measures

Objective: Identify and Manage Risk

Vessels Tracked

- Cruise Ships
- Ferries
- Tank and Cargo Barges
- Tank Vessels
- Cargo Ships
- Tugs
- Fishing Vessels
- Coast Guard Vessels
- Small Passenger Vessels
- State Fish and Game Vessels
- Oil Spill Response Vessels
- AIS equipped pleasure crafts
- Oil Exploration and Production Vessels

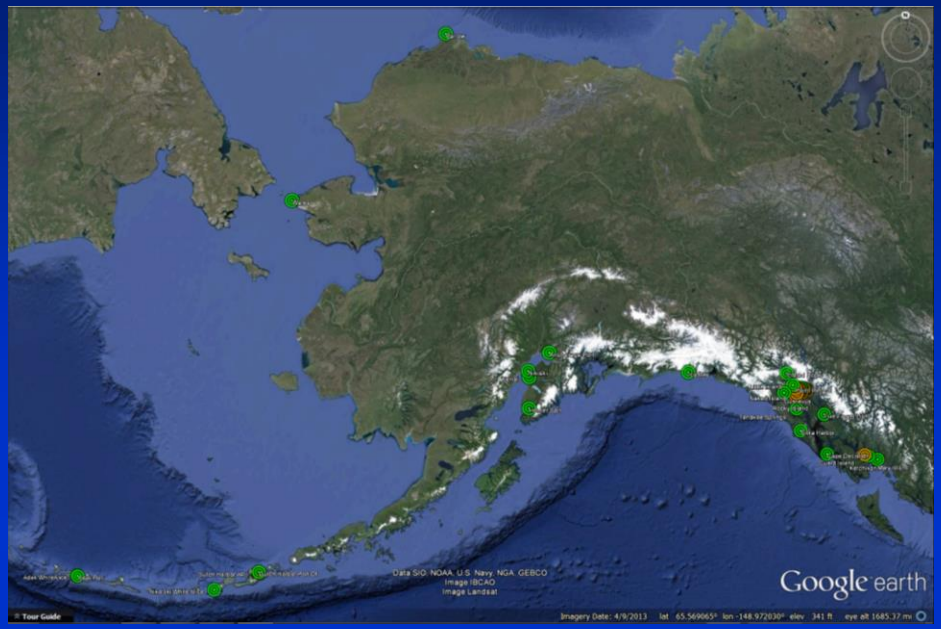
Managing the Maritime Domain

Best Available Technologies & Procedures

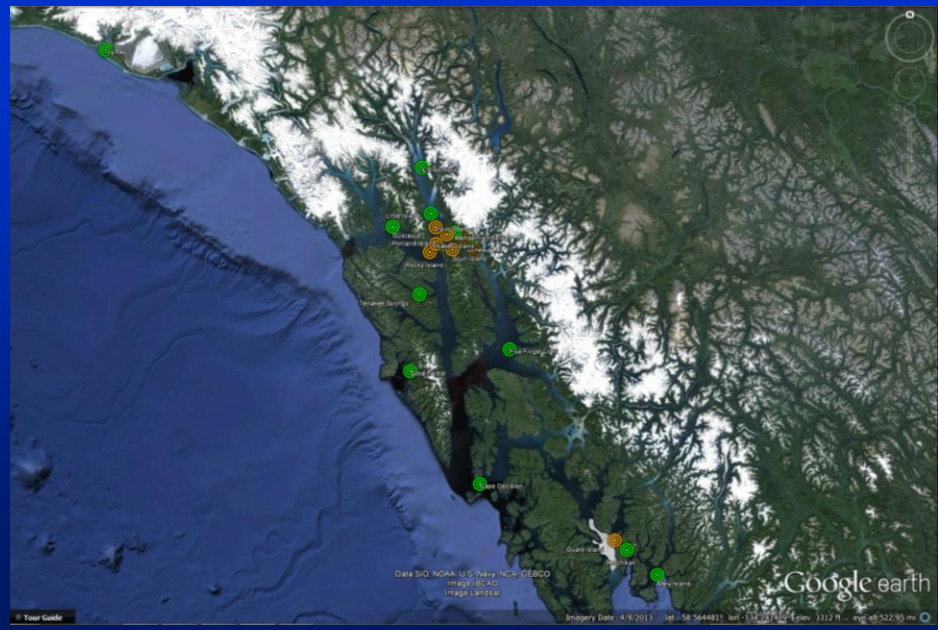
- AIS (Automatic Identification System)
  - Tactical applications: Terrestrial AIS
  - Strategic applications: Satellite AIS
- Satellite Transponders
- Weather/Environmental Sensors
- AIS shore transmissions – safety and environmental
- Digital Selective Calling (DSC) – Receivers
- Live watch

Marine Exchange AIS Receiving Sites

Marine Exchange Weather Sites

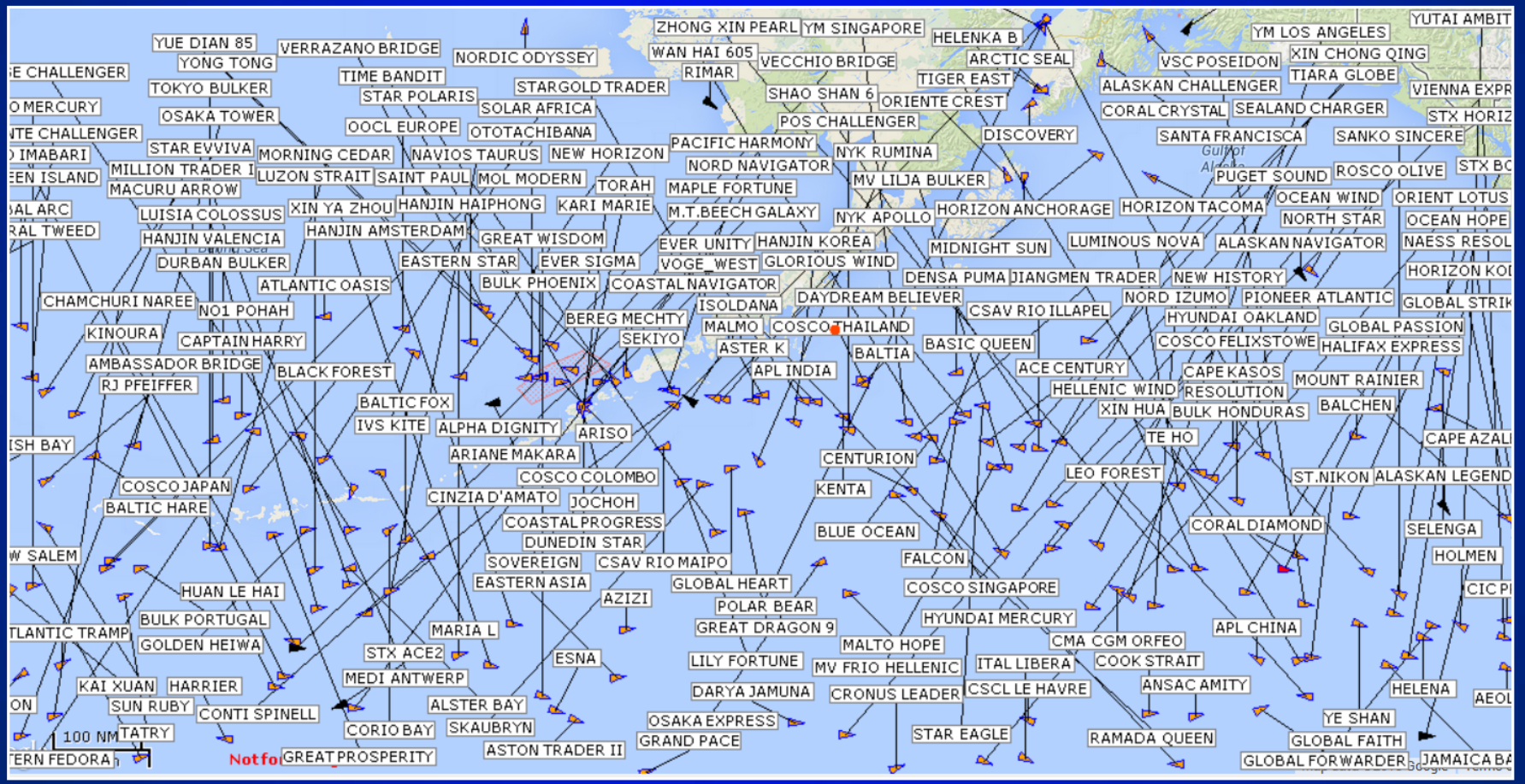


31 Sites

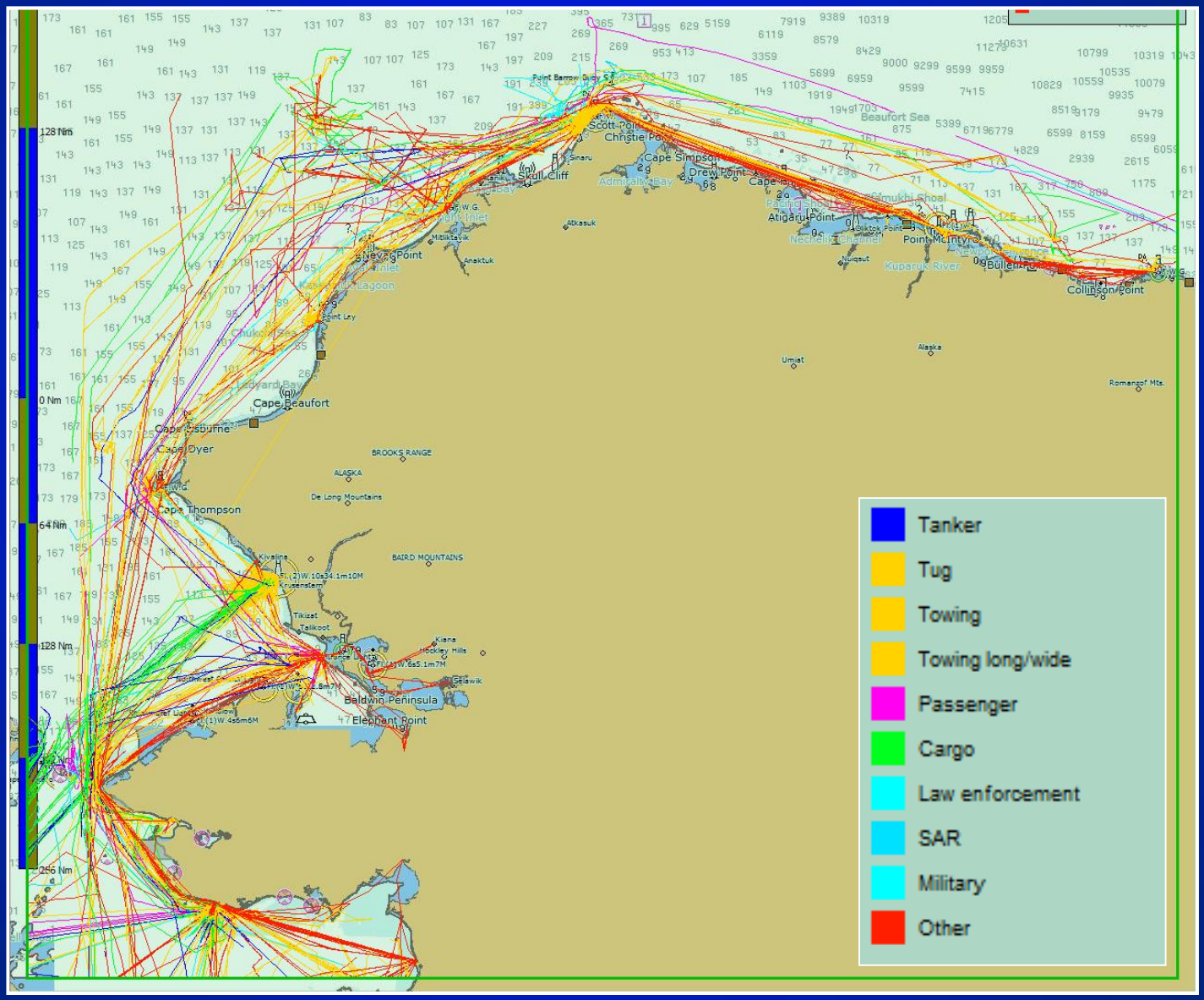


Marine Exchange ATON Sites

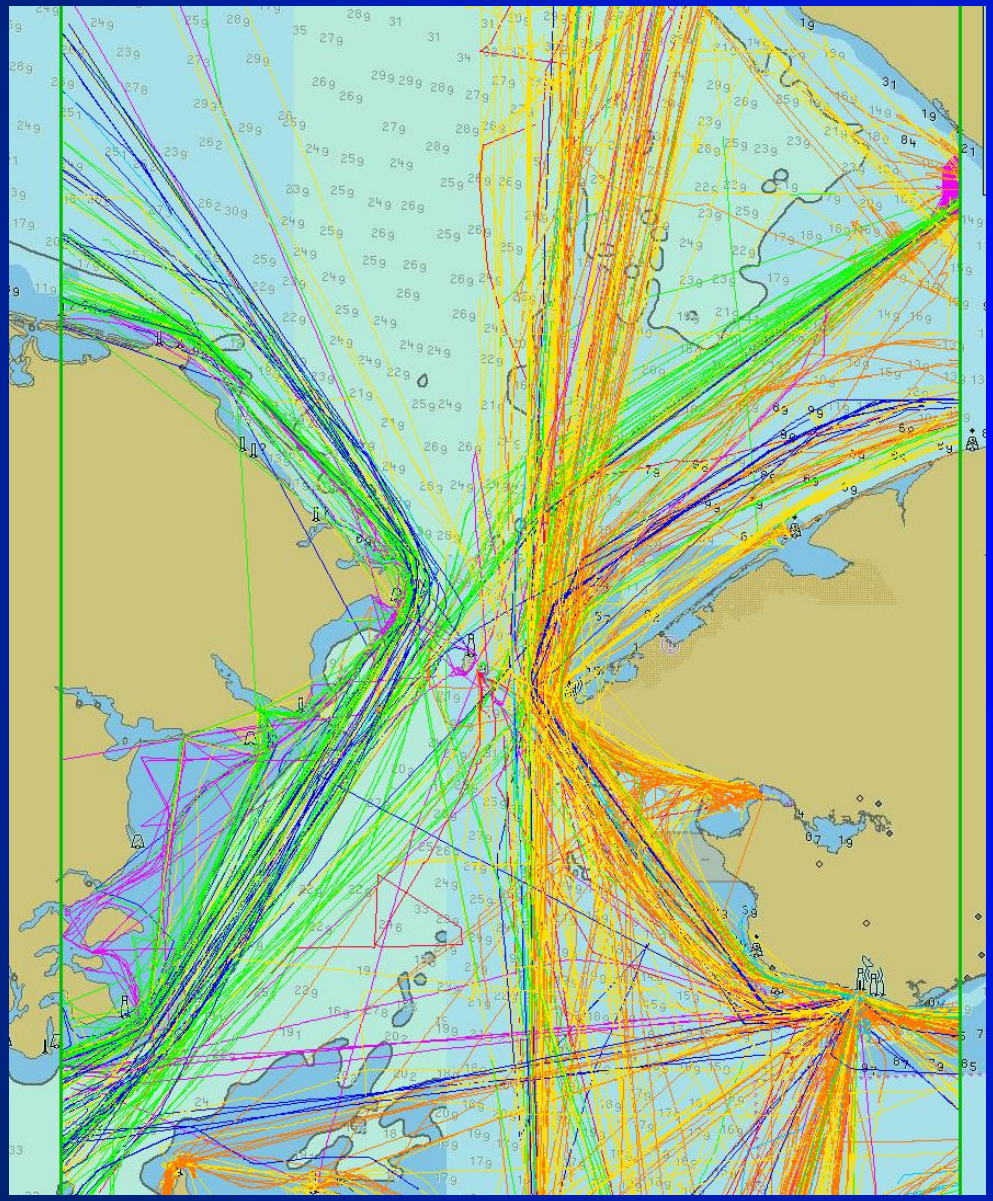
Alaska Vessel Traffic



North Slope Vessel Transits



Bering Strait Vessel Transits



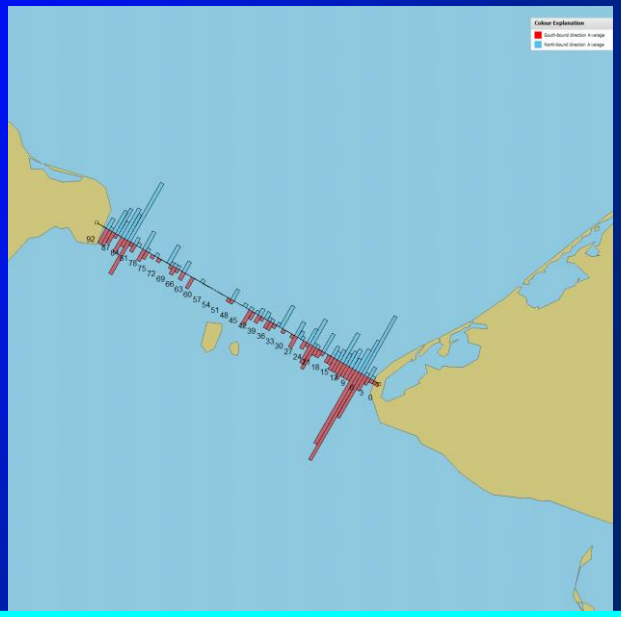
Oct 2012-Oct 2013

Vessel Traffic Analysis

Time	Name	Dft	Length	Ship Type	Direction	Destination	Cargo Type	Country
01 Aug	ARAON	7.2	102	Other	North	NOME	Icebreaker	kr
01 Aug	FEDERAL BAFFIN	10.7	190	Cargo	South	ONSAN/KOREA	Undefined	pa
08 Aug	SELANDIA	8.9	228	Cargo	North	RED DOG	Undefined	ag
09 Aug	WINDSOR ADVENTURE	6.6	190	Cargo	North	RED DOG,ALASK/	Undefined	pa
10 Aug	DELMAR	14.3	229	Cargo	South	VANCOUVER,CAI	Undefined	mh
12 Aug	SAMOS LEGEND	12.6	225	Cargo	South	BALBOA	Undefined	lr
14 Aug	ANEMOS	6.6	196	Cargo	North	RED DOG-ALASK/	Undefined	
16 Aug	MISHIMA	8.5	224	Cargo	North	US.RDB	Undefined	pa
17 Aug	SELANDIA	13.9	228	Cargo	South	VICTORIA PS	Undefined	ag
19 Aug	WINDSOR ADVENTURE	12.8	190	Cargo	South	LIANYUNGANG,C	Undefined	pa
23 Aug	F.D.GENNARO AURILIA	7.4	225	Cargo	North	RED DOG,ALASK/	Undefined	it
23 Aug	MISHIMA	12.1	224	Cargo	South	PA BLB	Undefined	pa
23 Aug	OCEAN BREEZE	5.6	183	Cargo	North	RED_DOG ALASK	Undefined	hk
25 Aug	ANEMOS	11	196	Cargo	South	HIKOSHIMA,JAP/	Undefined	
28 Aug	OCEAN BREEZE	12.2	183	Cargo	South	HACHINOHE JAP/	Undefined	hk
30 Aug	FEDERAL BAFFIN	6.1	190	Cargo	North	RED DOG/USA	Undefined	pa
30 Aug	F.D.GENNARO AURILIA	14.1	225	Cargo	South	VANCOUVER BC	Undefined	it
02 Aug	LEADER	7.6	106	Cargo	North	VANKAREM	Undefined	ru
03 Aug	ALDAN	7.2	132	Cargo	North	PEVEK	Undefined	ru
10 Aug	TAGANROGA	7.4	113	Tanker	North	TIKSI	Undefined	ru
10 Aug	BAY	7.5	107	Cargo	North	SHMIDT	Undefined	ru
16 Aug	IGRIM	8.1	160	Tanker	South	PROVIDENIYA	Undefined	ru
18 Aug	AION	7.8	150	Cargo	North	UELEN	Undefined	ru
19 Aug	KAPITAN KREMS	6.2	130	Cargo	North	PEVEK	Undefined	ru
19 Aug	IGARKA	8.9	176	Cargo	North	PEVEK	Undefined	ru
28 Aug	RAINFROST	9.2	153	Cargo	North	ST.PETERSBVRG	Undefined	pa
02 Aug	TRIUMPH	3.5	24	Towing lo	South	KOTZEBUE	Undefined	us
02 Aug	ISLAND SPIRIT	4	0	Tug	North	CHIFORNICK	Undefined	us
02 Aug	TUVLI	0	23	N/A	North		Undefined	us
03 Aug	SAM M TAALAK	1.5	44	Other	North		Undefined	us
03 Aug	CG SPAR	0	0	N/A	North		Undefined	us
04 Aug	FAIRWEATHER	5.5	72	Other	North	KOTZEBUE SOUN	Undefined	us
05 Aug	DUKE	6.7	67	Other	North	CHUCHI SEA	Undefined	bs
05 Aug	SAM M TAALAK	1.5	44	Other	South		Undefined	us
07 Aug	HUNTER	5.8	42	Towing lo	North	PRDHOE BAY	Undefined	us
07 Aug	PROFESSOR KHROMOV	0.5	72	Passenge	North	CHUKCHI_SEA	Undefined	ru
07 Aug	PROFESSOR KHROMOV	0.5	72	Passenge	South	CHUKCHI_SEA	Undefined	ru
07 Aug	PROFESSOR KHROMOV	0.5	72	Passenge	South	CHUKCHI_SEA	Undefined	ru
07 Aug	SAM M TAALAK	1.5	44	Other	North		Undefined	us
08 Aug	GUARDSMAN	5.8	45	Tug	North	DUTCH HARBOU	Undefined	us
08 Aug	WARRIOR	5	40	Tug	North	PRUDHOE BAY	Undefined	us
08 Aug	TRIUMPH	3.5	24	Towing lo	North	NOMEN	Undefined	us
09 Aug	SAM M TAALAK	1.5	44	Other	South		Undefined	us
10 Aug	ISLAND SPIRIT	4	0	Tug	South	CHIFORNICK	Undefined	us
10 Aug	CG SPAR	0	0	N/A	South		Undefined	us
11 Aug	ALASKA MARINER	0	37	Towing lo	North		Undefined	

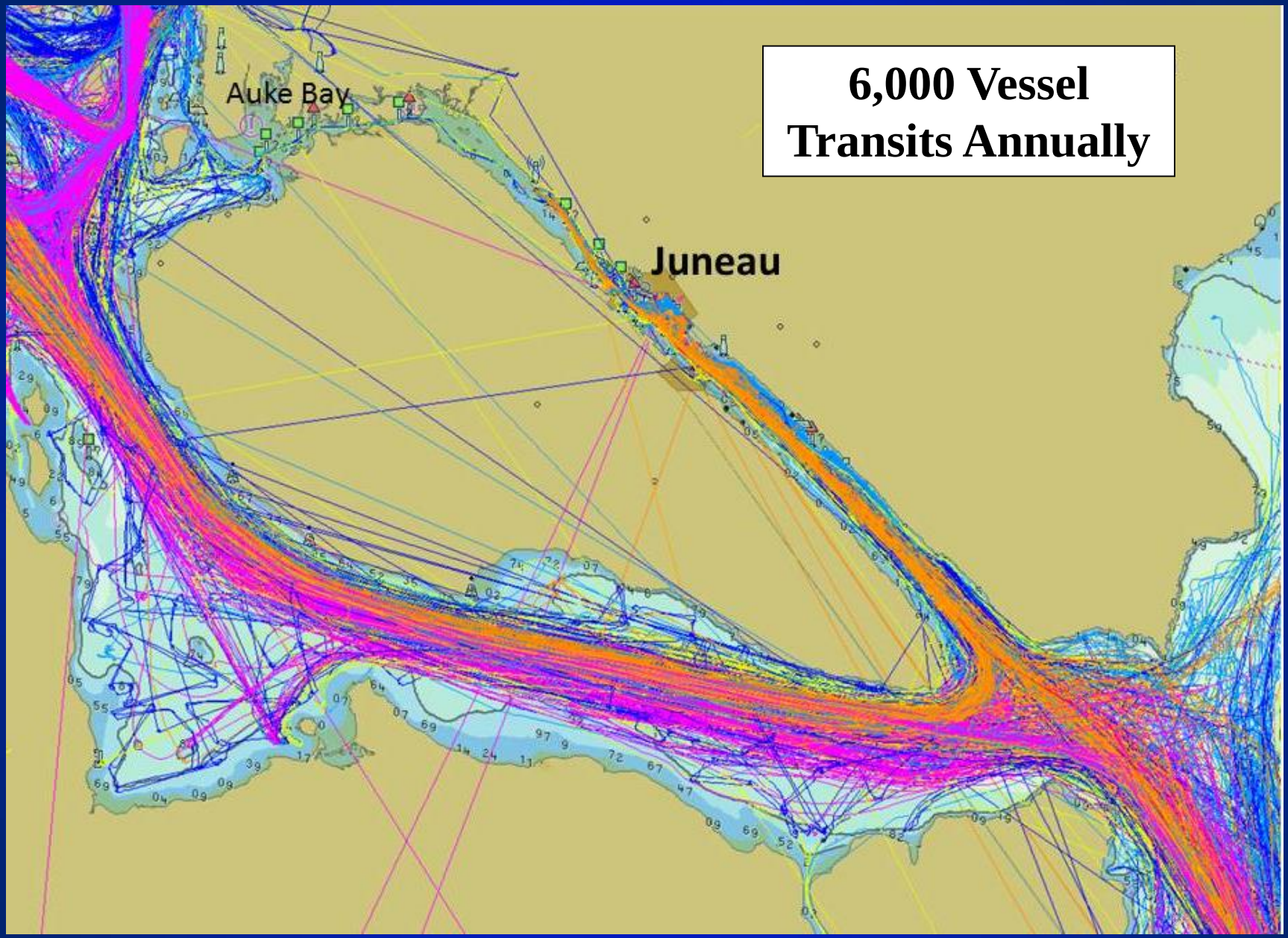
Red Dog Cargo Ships

Russian Northern Sea Route Traffic



Bering Strait

Perception	Reality
Narrow	Wide
Shallow	Deep
Hundreds of Vessels	Limited traffic
Dangerous	Pretty Safe
Need to stop ships	Need to manage risk

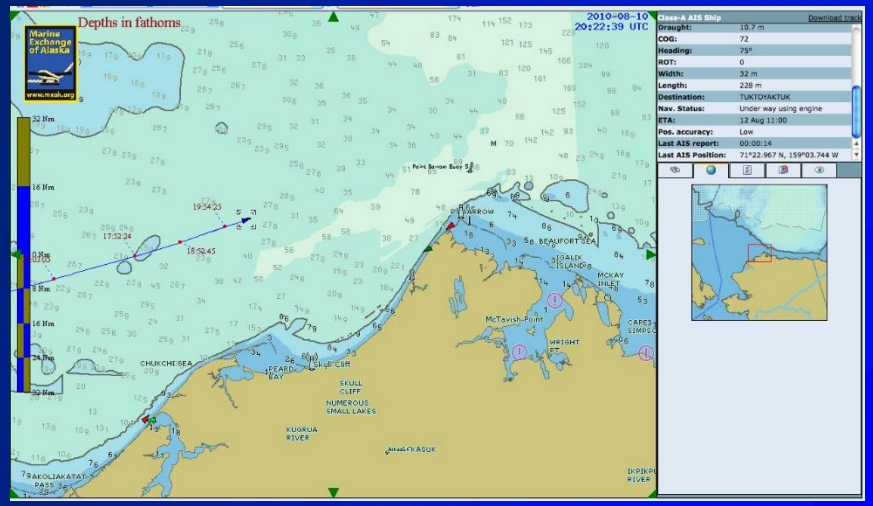

Auke Bay
Juneau
6,000 Vessel
Transits Annually

Selendang Ayu

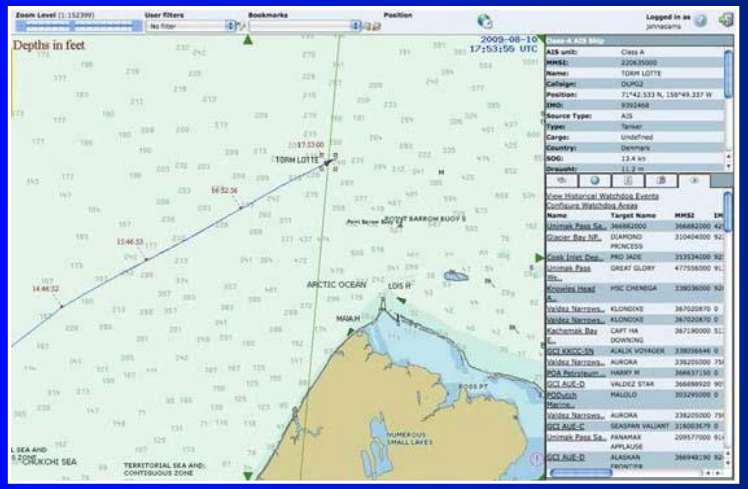
No Maritime Domain Awareness or Management

Maritime Domain Awareness
No Maritime Domain Management

Identifying and Tracking Vessels



Tanker *Marilee*, San Francisco to Tuktoyaktuk



Foreign Tanker Torm Lotte on voyage from San Francisco to Canadian Arctic Through Alaska Waters

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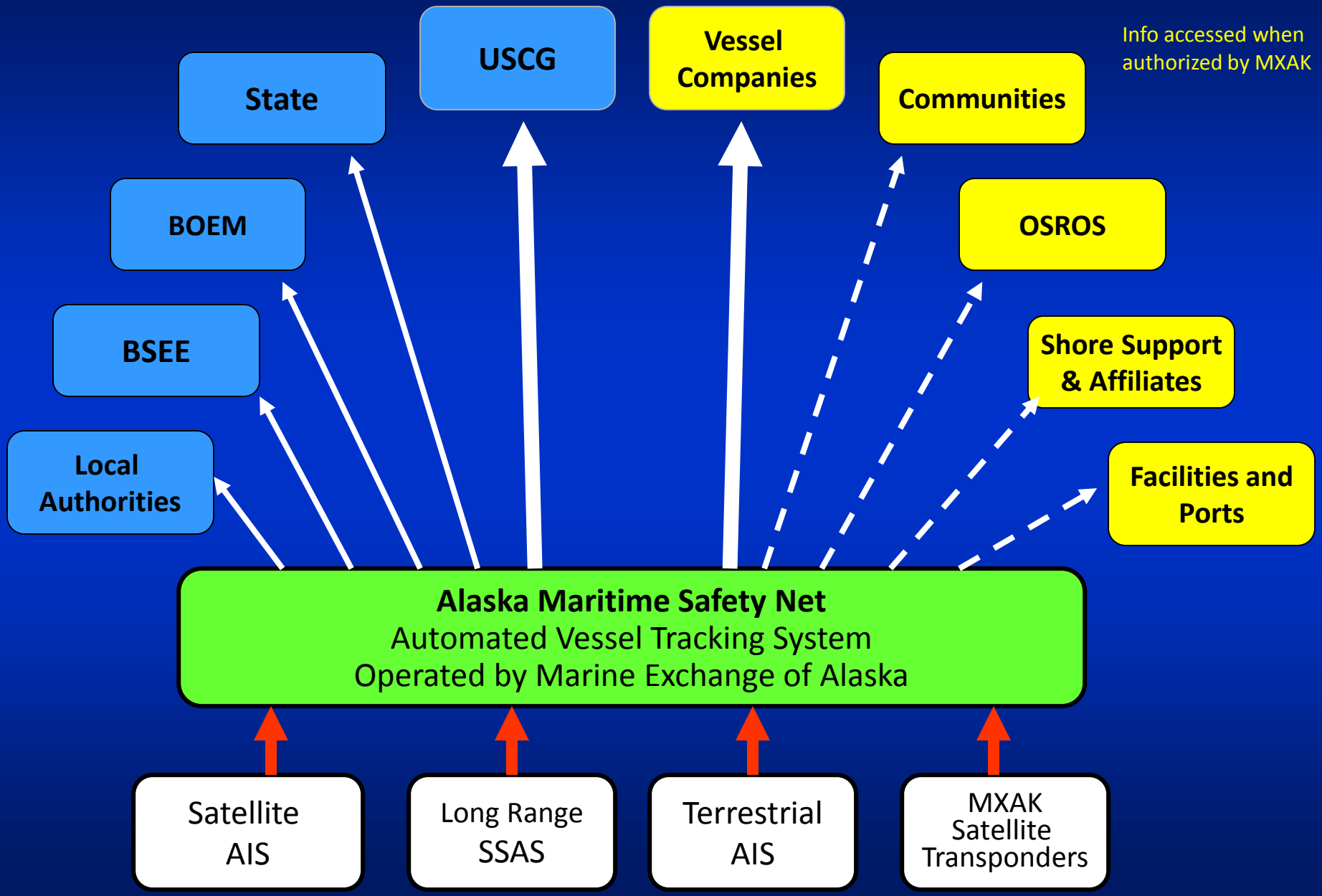
Maritime Domain Awareness and Management

Dissemination of Vessel Information

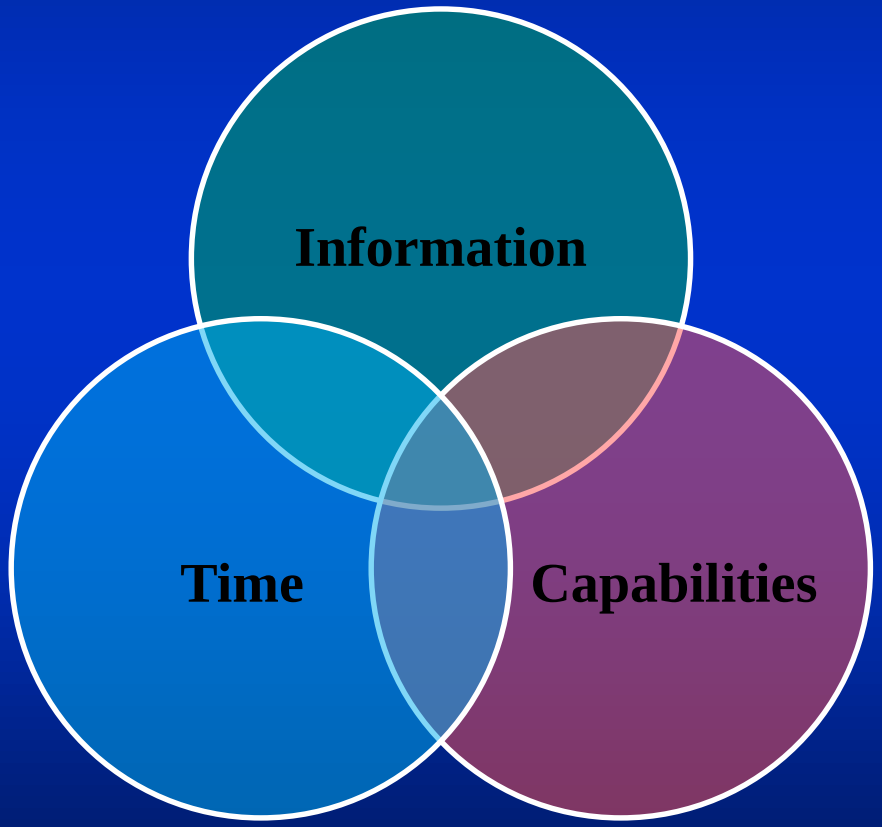


ALASKA MARITIME
PREVENTION & RESPONSE
NETWORK

Network Tanker and Nontank Vessel Alternative Planning Criteria (APC's) for Alaska

The Alaska Maritime Prevention and Response Network is a non-profit organization established to implement alternative spill response and prevention measures that most cost effectively meet the environmental protection objectives of state and federal regulations.

ALASKA MARITIME PREVENTION & RESPONSE NETWORK



INFORMATION

Notice of Incident, Location of vessels in distress, Location of assist vessels.

TIME

Distance offshore provides time for assist vessels to arrive

Early detection and immediate location of assist resource buys more time

CAPABILITIES

Monitoring locations of Assist vessels, Emergency Towing Systems, Vessels of Opportunity, Oil Spill Response Resources

AOOS Sponsored AIS Weather Project

AOOS
Alaska Ocean Observing System

USCG-MXAK CRADA

(Cooperative Research and Development Agreement)

"Arctic Next Generation Navigational Safety Information System"

Builds upon AOOS AIS/WX project to communicate information to vessels via AIS;

- Virtual aids to Navigation (i.e. buoys)
- Locations of whalers
- Environmental Data (i.e. weather and ice)
- Locations of whales
- Vessels in distress, etc.
- Notify vessels in "Areas to be Avoided" or exceeding speed restrictions

Arctic Marine Safety Site

University of Alaska Fairbanks

Radar

AIS

Weather

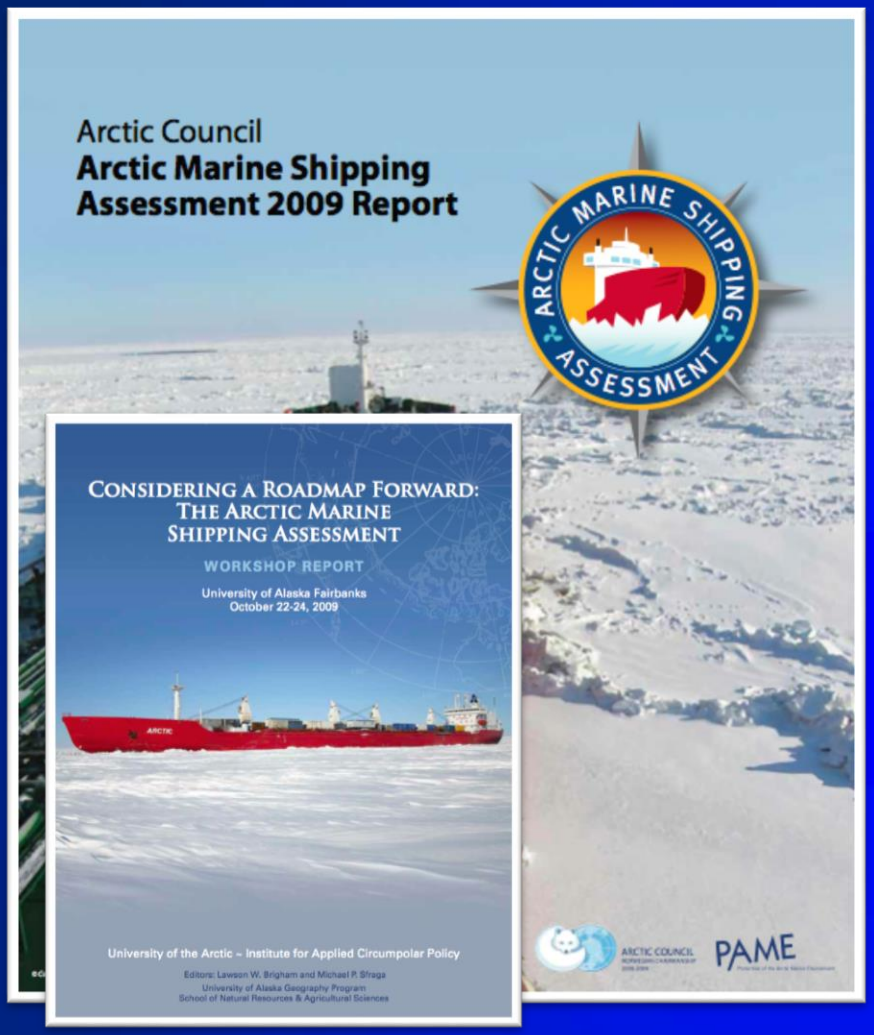
SAR Calls

Arctic Maritime Safety Net Project

Oil & Gas Industries

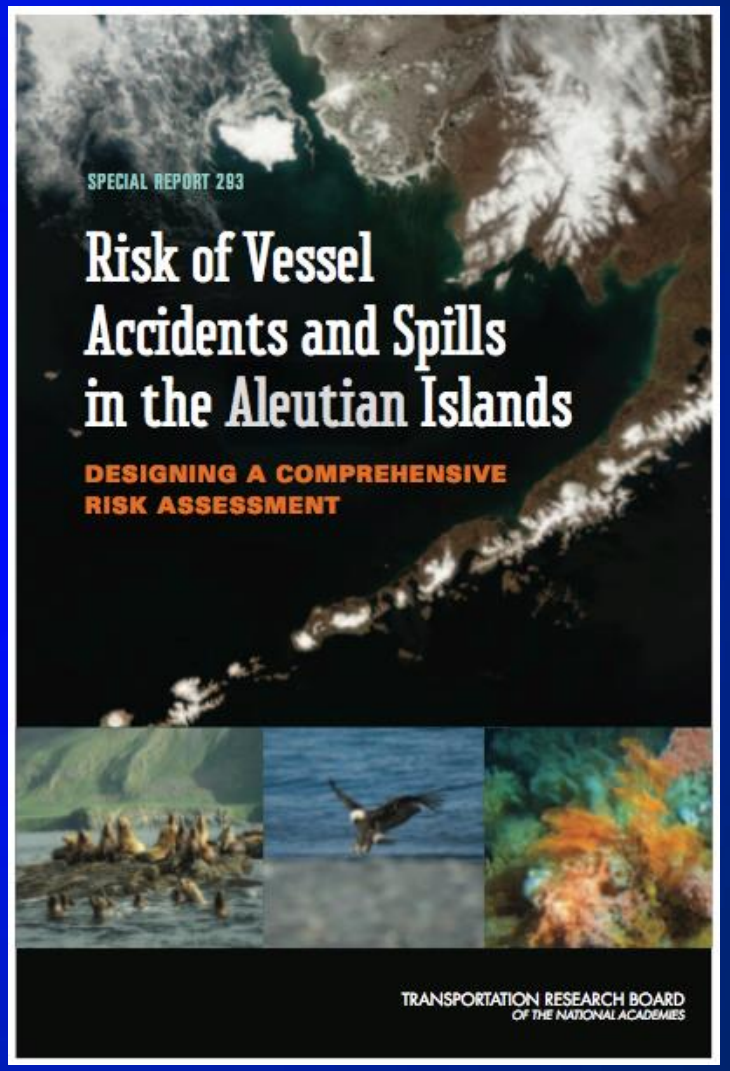
Arctic Vessel Tracking and Emergency Response System for Alaska Natives

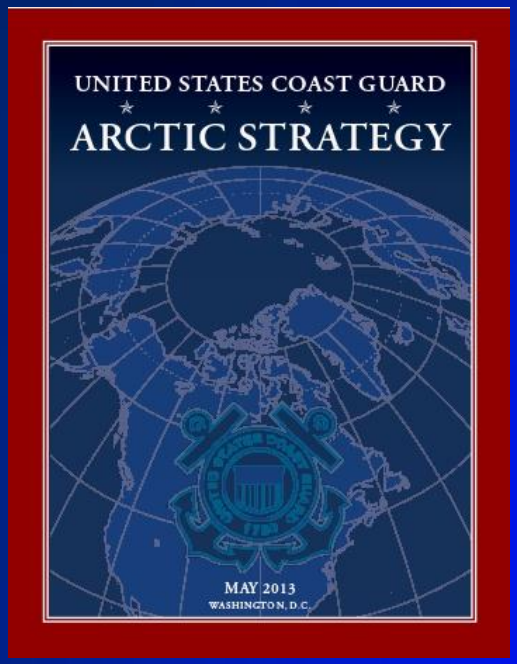
- Commercial vessels colliding with subsistence hunter boats
- Safety of subsistence hunters
- Commercial vessels impacting whales



"Completion of an AIS receiver network in the Arctic is high priority; linkages between AIS and marine mammal awareness need to be developed."

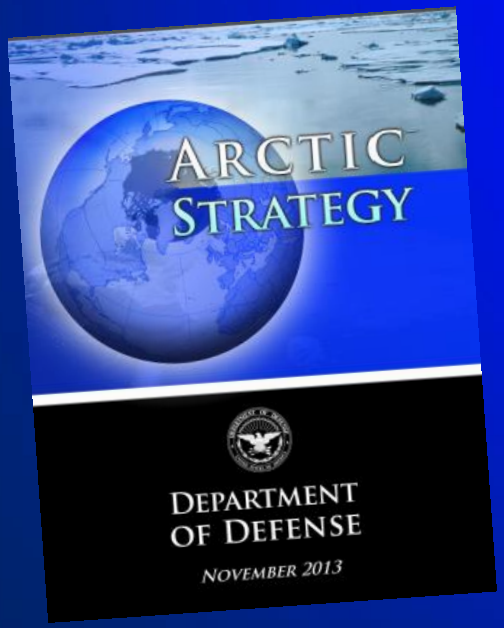
"… take appropriate action to expand the AIS tracking network …"

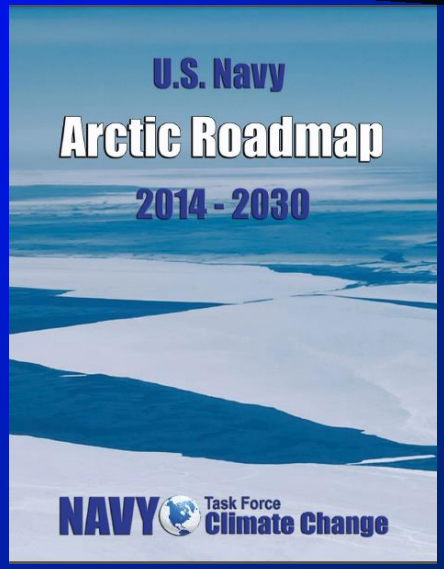


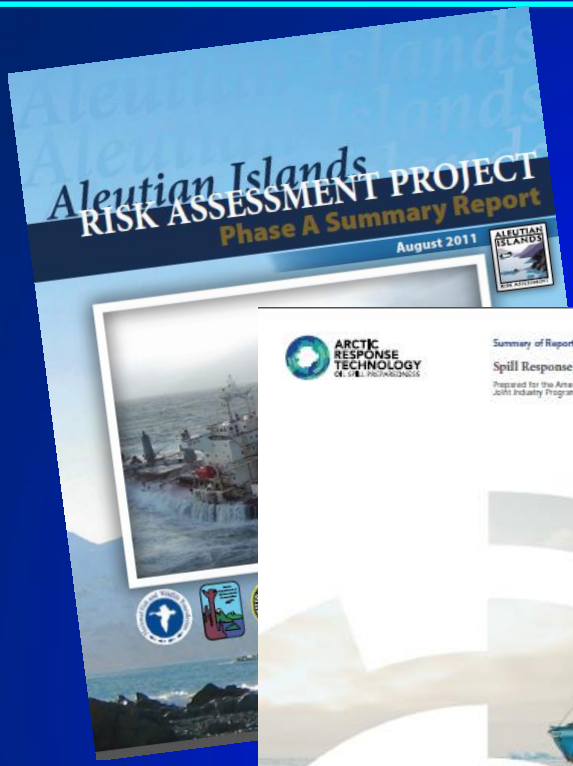


NATIONAL STRATEGY
FOR THE ARCTIC REGION

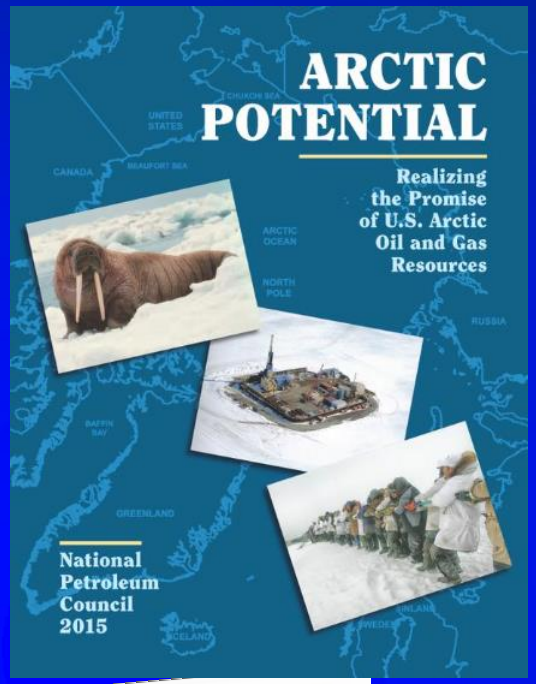
MAY 2013

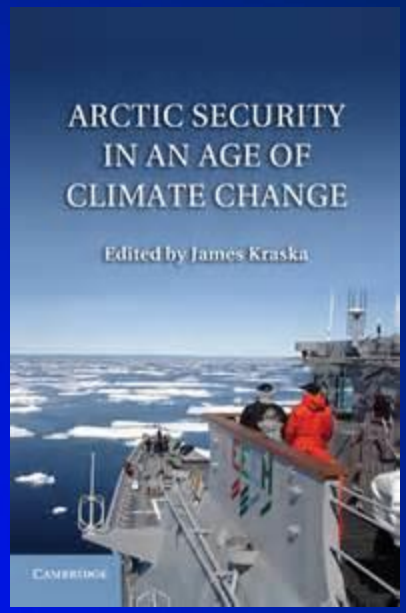


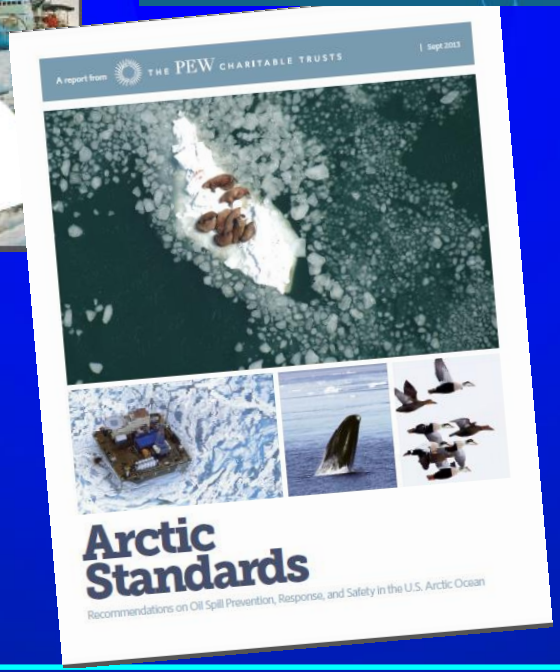


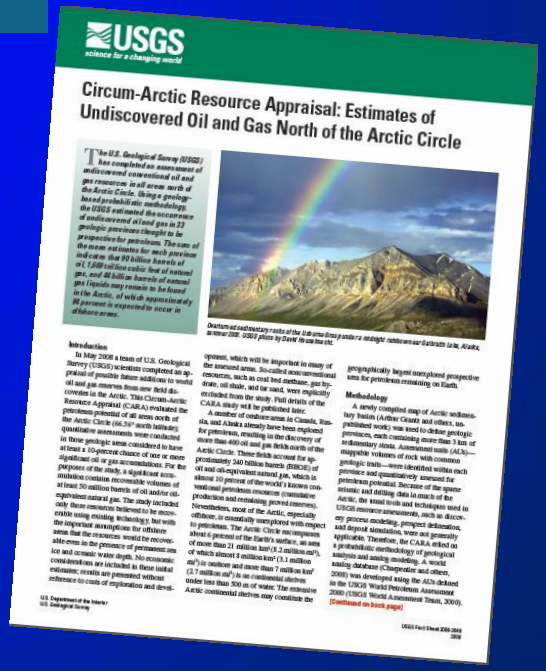

Aleutian Islands
RISK ASSESSMENT PROJECT
Phase A Summary Report
August 2011
ALEUTIAN ISLANDS


ARCTIC RESPONSE TECHNOLOGY
Summary of Report:
Spill Response in the Arctic Offshore
Prepared for the American Petroleum Institute and the Joint Industry Programme on Oil Spill Recovery in Ice


ARCTIC POTENTIAL
Realizing the Promise of U.S. Arctic Oil and Gas Resources
National Petroleum Council 2015


ARCTIC SECURITY IN AN AGE OF CLIMATE CHANGE
Edited by James Kraska


A report from THE PEW CHARITABLE TRUSTS
Sept 2013
Arctic Standards
Recommendations on Oil Spill Prevention, Response, and Safety in the U.S. Arctic Ocean


USGS
science for a changing world
Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle
Introduction
Methodology


WHAT DOES THE POLAR CODE MEAN FOR SHIP SAFETY?
EQUIPMENT
OPERATIONS & MANNING
DESIGN & CONSTRUCTION
BACKGROUND INFO
IMO

Marine Exchange of Alaska

www.mxak.org

Questions